

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Dana Alexa Totir et al. Art Unit : 1745
Serial No. : 10/800,905 Examiner : Raymond Alejandro
Filed : March 15, 2004 Conf. No. : 1479
Title : NON-AQUEOUS ELECTROCHEMICAL CELLS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**THIRD DECLARATION OF DANA ALEXA TOTIR, KIRAKODU S.
NANJUNDASWAMY AND MICHAEL POZIN UNDER 37 C.F.R. § 1.131**

1. We are the inventors of the inventions claimed in the above-captioned patent application. The following work was conducted in the United States.
2. Two laboratory notebook pages from a laboratory notebook of Dana Alex Totir are attached. The notebook pages are signed by Ms. Totir and are dated prior to December 3, 2002. The two pages are true and complete copies from the original notebook, except that the dates on the laboratory notebook pages have been whited out and information is highlighted as described below.
3. The laboratory notebook pages demonstrate that electrochemical cells covered by claims 1-5, 8-12, 14-24, 28, 31-35, 39-43, and 45-46 were made and used prior to December 3, 2002.
 - (a) Some of the information on the notebook pages is highlighted for convenience. See in particular the highlighted information next to "Cell #1" on page 2489-110 and "Cell #2" on page 2489-111. The electrochemical cells were coin cell models that included a plastic housing, a cathode including " β -EMD" (β -electrolytic manganese dioxide) on a "primed Al" (aluminum) current collector. The aluminum current collector in turn was pressed on an "SS grid". SS is stainless steel, and the aluminum current collector thus was in contact with a second metal surface (the stainless steel) different from the surface of the aluminum current collector. The cells included a "Li" (lithium) anode and an electrolyte including "0.05 M" (page 2489-110) or "0.03 M" (page 2489-111) LiBOB." LiBOB is lithium bis(oxalato)borate. Thus, the electrochemical cells described on laboratory notebook pages 2489-110 and 2489-111 include all of the requirements of claims 1-2, 5, 8-12, 31-35, and 45-46.

(b) Laboratory notebook pages 2489-110 and 2489-111 refer to “LiBOB in TDE10” in the highlighted information next to “Cell #1” and “Cell #2”. TDE10 is an internal name for an electrolyte that includes, among other ingredients, lithium trifluoromethanesulfonate. Thus, electrochemical cells on laboratory notebook pages 2489-110 and 2489-111 also include all of the requirements of claims 3 and 4.

(c) The aluminum cathode current collector used in the electrochemical cells on laboratory notebook pages 2489-110 and 2489-111 had a size of at least one dimension greater than 2 millimeters. Thus, the electrochemical cells on laboratory notebook pages 2489-110 and 2489-111 include all of the requirements of claims 14-16.

(d) The electrochemical cells on laboratory notebook pages 2489-110 and 2489-111 were designed to be discharged once and then discarded, and thus are primary electrochemical cells as opposed to secondary (rechargeable) electrochemical cells. Thus, the electrochemical cells on laboratory notebook pages 2489-110 and 2489-111 meet all of the requirements of claims 17-24, 28, and 39-43.

4. We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that those statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



Dana Alexa Totir

02/15/08


Date



Kirakodu S. Nanjundaswamy

03/12/08

Date



Michael Pozin

02.14.2008

Date

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

21846613.doc

Subject Matter

H corrosion: cor all this were inconsistent (results very over a large range)

Must test in H₂O of cells.

Tests:

- H₂-back cathodes pressed in SS fork in H₂ contact
- H₂O, 100 μ test
- corrosion of 43A can and of H₂ alloys @ 3.8V (or 3.7)

Impedance measurements with Ag pseudo-reference electrode.

3-electrode cell w. Ag pseudo-reference electrode, Li counter and reference electrode

measure OCV of Ag electrode w. Li reference in TBEO

CV of Ag (WE) vs Li (RE) in Potassium in PC/EC

CV of Ag (WE), Li (RE), Li (CE) w. Potassium in PC/EC

Ag (WE), Ag (RE), Li (CE) w. Potassium in PC/EC

to compare the peak potential for Ag (RE) and Li (RE) to find out the potential difference.

Cell

PC and TBEO in a primed K, PD control 1651 732

pressed in SS fork in galvanized Ni strip (4x1)

2500 Ohm, 0.05 M LiTOS in TBEO (prep)

1x2 L₂, 1000 μ cap. with

H₂O test (33 mV)

Cell

- DE 2110 a1. cor - Au (W), Li (R), Li (C), 1 mM ferrocene in TBEO, CV between 2.7 - 3.7 V @ 20 mV/sec.
- DE 2110 a2. cor - Ag (W), Au (C), Li (R), 1 mM ferrocene in TBEO - open circuit experiment to monitor Ag potential vs. Li
- DE 2110 a3. cor - Au (W), Li (C), Ag (R) - 1 mM ferrocene in TBEO PDA L₂ 0 - 0.7 V vs. ref @ 20 mV/sec
- DE 2110 a4. cor - Au (W), Li (C), Ag (R) - 1 mM ferrocene in TBEO CV -0.6 - 0 V vs. ref @ 20 mV/sec
- DE 2110 a5. cor - Same as above CV L₂ -0.5 and 0 V vs. ref @ 20 mV/sec

Witnessed & Understood by me,

Date

Recorded by

Date

Mander

Date

JP

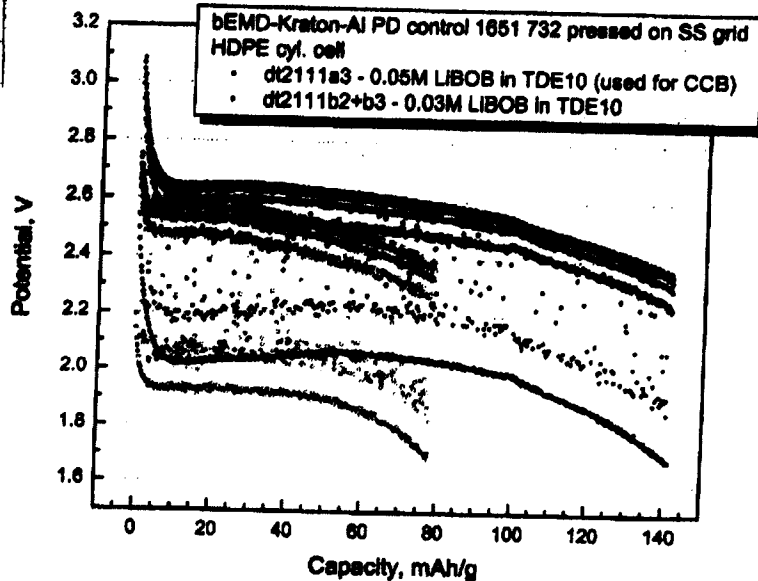
Subject Matter

- dt 2111 a1. cor - Cell #1 described in page 10 - stopped after 170 pulses
HEC test @ 33 mA
- dt 2111 a2. cor - OCV for 2h (cell #1)
- dt 2111 a3. cor - Cell #1, HEC test, 33 mA, 600 pulses

Cell #2:

β -cris Kraton in primed H, PD control 1651 732
pressed on SS grid w. g-t welded Ni strip (50)
d400 Celgard, 1 ml 0.03 M LiBOB in TDE10 (p.p.)
1x2 G, HEC cyl. cell.

- dt 2111 b1. cor - open circuit, 2h
- dt 2111 b2. cor - HEC test, 33 mA, 500 pulses
- dt 2111 b3. cor - HEC test, 33 mA, additional # of pulses
(collected next day)



Witnessed & Understood by me,

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Date

Date

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Date